Calibration

Specifications for calibration gas for CO_2 measurement system

5% carbon dioxide, 21% oxygen, balance nitrogen

Cylinder size: BD

Method of preparation: gravimetric

Accuracy: 0.03% absolute

Moisture: 10 ppm maximum

Expiration period: 2 years

Pressure: 144 psig; Volume: 11 liters

Certificate of analysis

Fitting included

Product code: 0304653SRO BD

Manufactured by: Scott Medical 6141 Easton Rd., Plumsteadville PA 18949
(800) 233-4334, (215) 766-8861,
FAX: (215) 766-7250

Calibration check from measuring mode for Microstream® $EtCO_2$ monitors

To ensure monitor reading accuracy, a calibration check needs to be performed periodically during the year. Be sure that the FilterLine® CO_2 sampling line is connected to the monitor before starting Calibration Check.

Figure 1

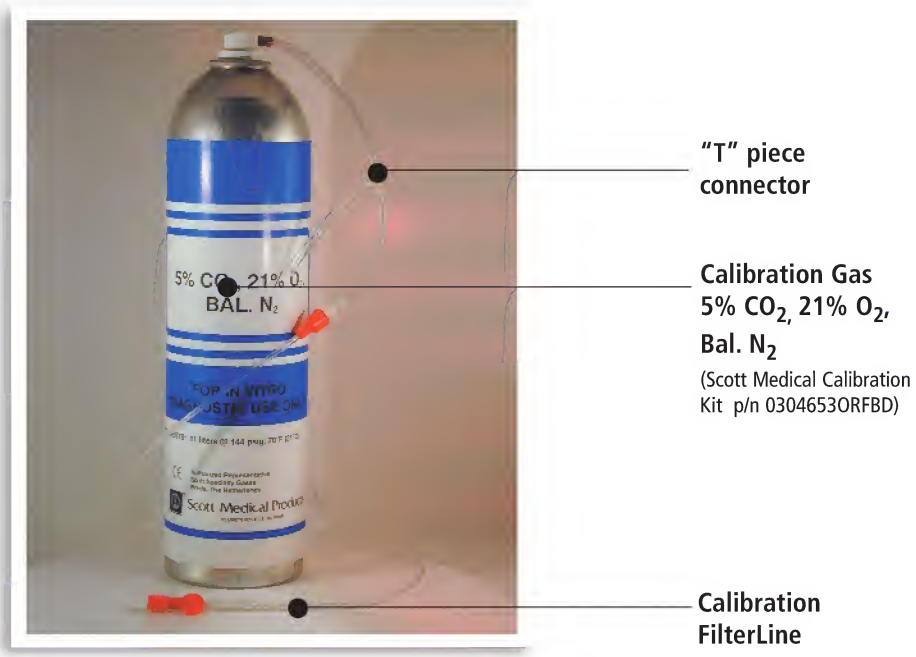
"T" piece connector
Calibration Gas 5% CO_2, 21% O_2, Bal. N_2
(Scott Medical Calibration Kit p/n 0304653ORFBD)
Calibration FilterLine

Figure 2

continued on next page

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Calibration

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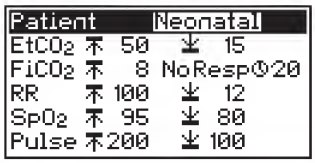
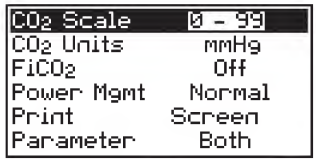
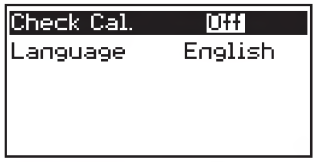
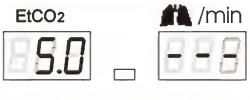
Objective	Action	Response
1. To access Cal Check Mode	Long press	
	Long press	
	Long press	
2. To start Check Cal	Press	
	Short press	
	No action required	
3. Prepare for Cal Check	Connect the FilterLine® to the Calibration Gas (See figure 2)	
4. Proceed with Cal Check	Press and hold the gas valve until the readings stabilize (approximately 15-20 seconds)	

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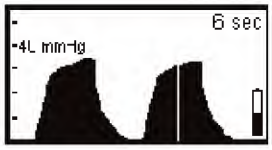
Calibration

Objective	Action	Response

Calibration is not required if the measured value is the same as the concentration of the calibration gas (±0.3 Vol%) e.g. Concentration of calibration gas used is 5% (CO_2); the measured value should be between 4.7%-5.3%, therefore, calibration is not required.

5. To reset and return to measuring mode (Automatically erasing event messages)	Long Press	

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Calibration

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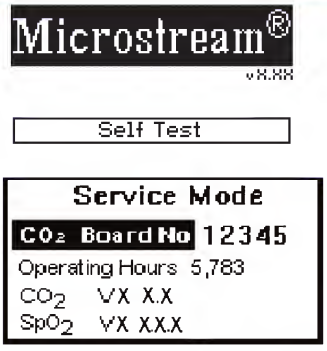
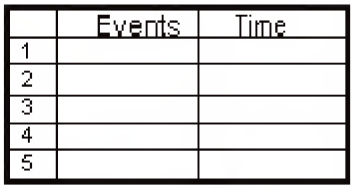
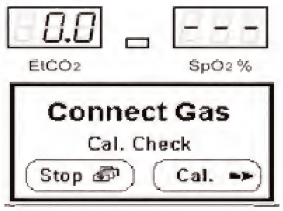
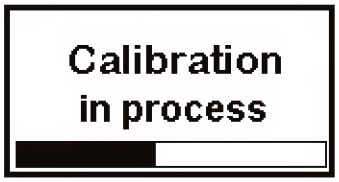
CO_2 Calibration

In order to ensure monitor reading accuracy, a calibration needs to be performed once a year or whenever the message **Calibration Required** appears on the monitor screen.

Objective	Action	Response
1. To access Service Mode	During self-test, long press simultaneously and hold until the Service Mode screen appears.	
2. To access CO_2 Calibration	Long press	
	Long press	
	Short press 3X	
3. Change option to Start	Short press	
4. Start Calibration process	Short press	

continued on next page

Calibration

Objective	Action	Response
	No action required	
5. Activating calibration	Connect the FilterLine® to the Calibration Gas (See figure 2)	
	Press and hold the gas valve Short press 	
	No action required	
	Continue pressing the gas valve until the Disconnect Gas message appears. Disconnect Gas from the FilterLine® (do not disconnect the FilterLine from the monitor) Wait approximately 15-20 seconds	
6. Calibration succeeded and return to measuring mode	Long press 	

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Objective	Action	Response
If calibration failed		
1.	Check connection and restart Long press 	
2.	Contact your local sales representative	

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Calibration

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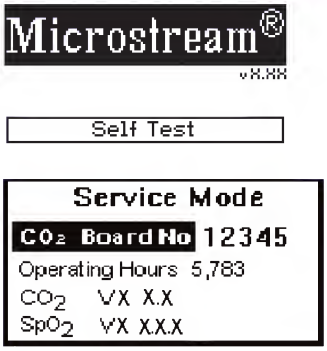
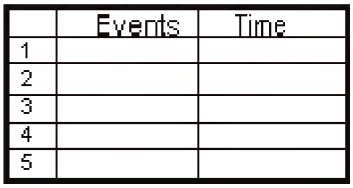
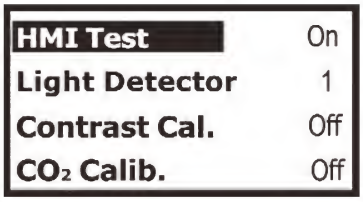
CO_2 Calibration Check from Service Mode for Microstream® Handhelds

In order to ensure accuracy, a CO_2 calibration check needs to be done periodically. Calibration gas and a FilterLine® are needed for this procedure.

Objective	Action	Response
1. To access Service Mode	During self-test, long press simultaneously and hold until the Service Mode screen appears.	
2. To access CO_2 Calibration	Long press	
	Long press	
	Short press 3X	

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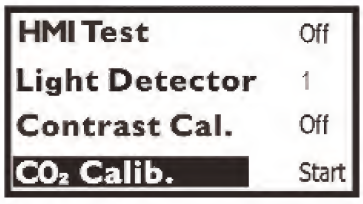
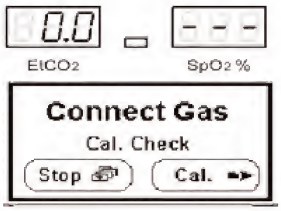
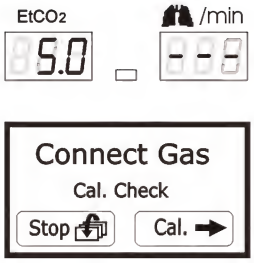
Objective	Action	Response
3. Change option to Start	Short press	
4. Start Cal Check process	Short press	
	No action required	
5. Prepare for Cal Check	Connect the FilterLine® to the Calibration Gas (See figure 2)	
6. Proceed with Cal Check	Press and hold the gas valve until the readings stabilize (approximately 15-20 seconds)	
7. To reset and return to measuring mode (Automatically erasing event messages)	Long Press	

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Capnostream™ – CO_2 Calibration Check

Depending on institutional policy and procedure, the monitor can be checked at any time to determine if the CO_2 detection is within the accepted limits. The Calibration Check Procedure below gives the step-by-step instructions to perform a Calibration Check.

> **Caution:** *The calibration check must be performed with a manufacturer authorized Calibration Kit containing a gas mixture of 5% CO_2 21% O_2 and Bal N_2 and the authorized connecting means ("T" piece).*

A manufacturer approved Calibration Kit can be purchased from Scott Medical (part number 0304653ORFBD) consisting of:

- Calibration Gas containing 5% CO_2, 21% O_2 Bal N_2
- Tubing Adapter ("T" Piece)
- Calibration Line (Short Calibration FilterLine®)

> **Note:** If this process is performed while a battery powers the monitor, make sure that the battery is fully charged.

Prior to checking the calibration, verify that the Calibration Line supplied with the Calibration Kit is firmly attached.

Calibration Check Procedure

> **Note:** At any stage in the Calibration Check procedure, you can go BACK to the first screen.

Steps

1. Use the control knob to navigate to the CO_2 CALIBRATION CHECK screen. From the HOME screen select the SYSTEM menu and then select CAL CHECK. Or, from the SERVICE screen select CO_2 CAL and then select CAL CHECK.

   The CO_2 CALIBRATION CHECK screen is displayed. On-screen instructions will guide you through a number of Calibration Check steps.

2. The screen displays the message: "CONNECT FILTERLINE TO MONITOR". Connect the Calibration Line to the monitor and select START to start the calibration check.

3. The screen displays the message: "CONNECT CALIBRATION GAS [5% CO_2 21% O_2 BALANCE N_2]". Connect the other end of the Calibration Line to the gas canister, then select CONTINUE.

4. The screen displays the message: "OPEN GAS SUPPLY FROM CYLINDER". Open the gas canister and select CONTINUE.

   At this time, the module performs a calibration check. While doing so, it displays a message "CALIBRATION CHECK IN PROGRESS". If the CO_2 Module is still warming up, the monitor displays a message "NOT READY TO CALIBRATE". Wait until module is ready and then select CONTINUE.

5. When the module has completed the calibration check measurements and is processing data, it displays the message:

   "CALCULATING RESULTS, GAS SUPPLY MAY BE CLOSED."

6. Close the calibration check gas supply. If you have to stop the calibration check, use the control knob to select STOP.

continued on next page

Steps continued.

7. The screen displays the message: "DISCONNECT CALIBRATION GAS AND FILTERLINE" and CONTINUE.

   The module then displays:

   CALIBRATION CHECK COMPLETE

   MEASURED CO_2 X.X%

   ACCURACY SPECIFICATION FOR A 5% GAS IS 4.7–5.3%.

   Select BACK to return to the HOME screen, or START to perform the calibration check again.

If the calibration check result indicates that the monitor is out of calibration, then the message "MEASURED CO_2 NOT WITHIN SPECIFICATIONS. CALIBRATION RECOMMENDED" is displayed. In this case, the Calibration Procedure needs to be performed. Refer to the Service Manual or to authorized Oridion Service personnel.

If the monitor is unable to complete the calibration check, a "CALIBRATION FAILED" message appears with one of the following error messages:

- "FILTERLINE NOT CONNECTED"
- "CALIBRATION FAILED: NO GAS, WRONG GAS CONCENTRATION, OR UNSTABLE GAS"
- "MEASUREMENT ERROR; CHECK ALL CONNECTIONS AND TRY AGAIN"
- "CALIBRATION ABORTED BY USER"

"CO_2 MODULE INTERNAL SELF–TEST FAILED"